

NEW PUBLICATIONS.

THE ANTI-MOSQUITO CAMPAIGN.

DRAGON FLIES VS. MOSQUITOES.—Can the Mosquito Pest be Exterminated? studies in the Life History of Irritating Insects; their Natural Enemies and Artificial Checks, by Working Entomologist, Dr. L. Lamborn, Ph. D., 12mo, pp. 292. D. Appleton & Co.

The stimulus to investigation given by Dr. Lamborn's offer of prizes for the best essays treating of methods for the extermination of the mosquito has produced a volume of highly interesting information concerning the habits and life history of the insect in question, together with similar discussions of that milder nuisance, the housefly, and more or less practical suggestions for remedial measures. As regards the housefly, while it is probably altogether impracticable to exterminate the insect, it is by no means clear that the fly deserves such radical treatment, while it is quite certain that it serves beneficial purposes, and that its elimination would be followed by consequences calamitous to man. It may indeed be said that if hygienic laws were respected; if our civilization were higher than it is, that is to say, it would be possible to do away with the conditions which produce and perpetuate the housefly. That insect is dependent for its breeding upon the persistence of certain non-hygienic conditions, and principally upon the maintenance of stables. The manure heaps in stable yards are the greatest breeding-grounds of the housefly. If, therefore, there were no stables in cities, there would be far fewer flies. But, once bred, the fly becomes useful, for it acts as a scavenger, and disposes of incredible quantities of matter which, left to fester and decompose, would engender disease. Of course this scavenging would be unnecessary if cleanliness were enforced in houses and yards and streets. As it is, the persistence of the house fly may be regarded as proof that mankind have not yet passed altogether beyond the stage of barbarism. To-day we can neither get rid of the housefly, nor can we afford to be without it, and were its extermination possible, it would certainly be followed by worse evils than those struck at by the measure.

The case of the mosquito is different. It is not possible to contend that Culex serves any end of service to man. The idea that it destroys the germs of malaria seems to have been conceived by some one who could not tolerate the notion of an absolutely useless creature. There is, however, no support for the theory, no evidence whatever that the mosquito is other than an unmixed nuisance and evil. The strongest presumption is that the same conditions which generate malaria are favorable to the breeding of mosquitoes, and a fair inference is that if the conditions can be amended both malaria and mosquitoes will go.

It is a curious fact, unnoticed by any of the Lamborn essays, by the way, that of the largest and fiercest kinds of mosquito are found in the most sparsely populated regions. The traveler who proceeds due north will find these insects increasing in size, numbers and ferocity as he journeys poleward, and on the swampy levels of the Alaskan littoral he will encounter hordes which for activity, magnitude and venom are to the New-Jersey species what a hawk is to a sparrow. On the portages of the Cascade Mountains, in British Columbia, even the Indians are routed and put to flight by a Culex known there as the "lion" mosquito. In the Alaskan swamps, even the thick-haired bear is mobbed to death by these agile and merciless tormentors. The fact that these insects attain such dimensions when there are practically neither men nor animals to catch them to feed proves that they were not originally intended to be blood-suckers. The equally inadmissible fact that they throw themselves furiously and unhesitatingly upon whatever warm-blooded animal comes their way shows that at least they have no vegetarian prejudices.

The Lamborn essays consider the life-habits of the mosquito with a view to ascertaining whether there is any possibility of getting rid of him; and it must be said that after the ground has been pretty thoroughly gone over the prospects of ridding the world up very brightly. Dr. Lamborn's idea was that, inasmuch as the dragonfly eats mosquitoes, he might be employed to exterminate them by judicious breeding, etc. But it appears upon examination that there are several hindrances to this scheme, and what is more, that they are insurmountable. In the first place the habits of the dragonfly are diurnal, while those of the mosquito are nocturnal. This is a formidable obstacle, for it means that just when the mosquito is most actively engaged in making a nuisance of himself the dragonfly is slumbering for the day. In the second place, the dragonfly cannot be bred in the same habitats as the mosquito, save in rare instances. The former requires open spaces and sun-shine for his nursery. The latter will breed in the darkest and most confined ditches, pools and enclosed forest barns. In the third place the dragonfly has only one brood in the year, whereas the mosquito multiplies with rabbit-like celerity. All these facts tell finally against the practicability of making the dragonfly destroy the mosquito. There are, it is true, other enemies of the Culex, such as species of spider, some species of birds and most fishes, which consume the larvae with relish. But, as all these agencies are now, and always have been, at work, and as it is evident that they have failed to effect an appreciable reduction in the ranks of the enemy, it is not worth while to pay much attention to them.

Artificial checks to the mosquito are in some respects more hopeful, though not so much so as to warrant premature rejoicing. By spraying petroleum over the surface of swamps, ditches, ponds, pools and other breeding-places of the Culex, it can undoubtedly be destroyed in its early stages; but it is evident that such a remedy, to produce any important effects, would have to be applied on a very large scale and systematically. The mosquito may be fought, too, by careful attention to the prevention of dampness; by the drainage of swamps especially much good may be done; but this again is a work of cost and magnitude. Yet in this measure quite possibly lies the only practical means of recovering to human race and residence those considerable tracts of country lying along the ocean shore, which have for generations been completely desolated by these insect pests. The question is of especial importance for New-Jersey, where thousands of acres of valuable land are thrown out of occupation by this cause alone. The drainage of the swamp area all along the coast would not do but a difficult undertaking, but entirely practicable, and probably the only remedy for the evil complained of. Here, too, would be a favorable field for experimentation with petroleum, the application of which is proposed both by covering the surface of the water with a thin film of oil, and by surrounding lamps with pans of the oil, into which the insects, attracted by the light, would fall in large numbers.

The remedies proposed to be applied when the mosquito is in its larval state appear more promising than those which are directed against the imago, and petroleum seems to be the best of all because of its cheapness and the various easy ways in which it can be employed. Yet when the prolific nature of the pest, and its wide distribution, are considered, together with the absolute necessity of extended and simultaneous action, the probability that any considerable success will be attained in dealing with the evil is not very great. Before the conditions which favor the breeding of mosquitoes can be readily changed; moreover, there must be a general recognition of and attention to those fundamental hygienic principles the common neglect of which almost everywhere is at present so discouraging. But if practical beneficial results are not to be expected in the immediate future from such investigations as Dr. Lamborn has set on foot, the importance and usefulness of rousing public attention and interest to the subject sufficiently justifies the movement. Sciences may discover some hitherto unsuspected remedy for the evil, or the difficulties in the way of remedies now suggested may be removed. Inquiry and discussion are the necessary beginnings of improvement and the Lamborn essays mark a noteworthy step in this direction. The work is well illustrated with plates, and contains an extensive bibliography of the subject.

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